



USDA Foreign Agricultural Service

GAIN Report

Global Agriculture Information Network

Template Version 2.08

Required Report - public distribution

Date: 8/27/2007

GAIN Report Number: SN7008

Singapore

Biotechnology

Annual

2007

Approved by:

David Cottrell
U.S. Embassy

Prepared by:

Bernard Kong

Report Highlights:

Singapore initiated a six-month trial monitoring program for the import of all corn kernels and soy grains in the attempt to establish the extent of transgenic content. Singapore's regulatory policy on imported genetically modified organisms centers on issues related to food safety and is based on the concept of substantial equivalence. Singapore is prepared to allow imported genetically modified products provided they are in compliance with international safety standards established by organizations like Codex and are approved by the national regulatory authorities in their countries of origin.

Includes PSD Changes: No
Includes Trade Matrix: No
Annual Report
Singapore [SN1]
[SN]

Table of Contents

SECTION I. EXECUTIVE SUMMARY.....	2
SECTION II. BIOTECHNOLOGY TRADE AND PRODUCTION.....	3
SECTION III. BIOTECHNOLOGY POLICY.....	3
SECTION IV. MARKETING Issues.....	7
SECTION V. CAPACITY BUILDING AND OUTREACH.....	7
SECTION VI. REFERENCE MATERIALS.....	8

SECTION I. EXECUTIVE SUMMARY

Singapore has set up a science based regulatory framework including the formation of the Genetic Modification Advisory Committee (GMAC) to establish biosafety guidelines in Singapore for genetically modified organisms (GMOs).

While no new and separate legislation has been established specifically for the import, production or distribution of genetically modified organisms, Singapore authorities are relying on existing food regulations under the Food Act to exercise the regulatory controls and oversight.

All imported foods, both GMOs and non-GMOs have to be determined safe by their respective national regulatory bodies of the exporting countries as well as in compliance with international safety standards established by Codex Alimentarius before they are allowed entry into Singapore.

On March 1, 2007, the Singapore Government introduced a six-month trial monitoring of the imports of corn kernels and soy grains in order to establish the extent of transgenicity in the imported grains. The U.S. government had expressed its concern at the implementation of this trial monitoring and the difficulty for U.S. millers to comply given that common processing and milling equipment are used for both GMO and non-GMO grains.

SECTION II. BIOTECHNOLOGY TRADE AND PRODUCTION

All importers who wish to import genetically modified organism must first seek the approval of the Agri-Food & Veterinary Authority of Singapore, the agency which is tasked with ensuring adherence to the "Guidelines on the Release of Agriculture-Related Genetically Modified Organisms", which took effect in August 1999. The guidelines cover both processed and unprocessed food products and provide the framework for assessment of risks of agriculture-related GMOs to human health and the environment. These guidelines also provide the approval mechanisms for their release in Singapore

Singapore currently does not produce any agricultural-related GMOs in Singapore or outside the country. There are also no biotechnology crops under development nor does post envisage any that will be on the market in the next 12 months.

Singapore has already approved the import of agricultural biotech products such as genetically modified corn and soybeans to be used in foods and feeds. Some of these may be of U.S. origin. On March 1, 2007, the Singapore Government introduced a six-month trial monitoring of soy grains and corn kernels. Singapore importers were required to indicate the transgenic content of the shipment of corn or soy grains and products on their permit application including the specific transgenic crops or events present in the shipment. There is considerable difficulty for U.S. millers and exporters to identify any genetically modified grains since they do not segregate the different varieties of corn and soy grains handled and processed through the same equipment.

The purpose of this trial according to the Singapore Government was to explore a suitable mechanism to track food products of genetically modified origin that are imported into Singapore. The U.S. expressed its concern that these requirements in the of a trial monitoring program could present significant challenges to Singapore importers of U.S. corn and soy grains without providing any safety benefits to Singapore consumers.

Singapore, with one of the highest per capita incomes in the world (about \$24,000 per annum), is not a food aid recipient and is unlikely to be one in the foreseeable future.

SECTION III. BIOTECHNOLOGY POLICY

Regulatory Framework:

The Genetic Modification Advisory Committee (GMAC) comprising of members from ten government, scientific and educational agencies was established in Singapore in April 1999. The main objective of GMAC is to oversee and advise on the research and development, production, use, handling and release of GMOs in Singapore ensuring that these are done in compliance with international standards.

GMAC has developed the regulatory and administrative framework for approving biosafety guidelines regarding GMOs, as well as for the exchange of information with overseas agencies to facilitate the harmonization of guidelines with regional and international authorities. These guidelines address issues related to food safety based on the concept of substantial equivalence.

The biosafety guidelines that are being developed will be in line with international safety standards and will strive to create a streamlined approval and evaluation process.

Central to this framework is the use of existing legislation and food regulations enacted under the current Food Act to regulate the import and distribution of genetically modified organisms. GMAC's recommendations will be transmitted to the relevant regulatory agencies for adoption and implementation.

Efforts will also be made to educate the public on genetically modified organisms (GMOs) or GMO derived products through public awareness programs.

The Committee first met on April 12, 1999 where it was decided that three sub-committees would be formed to deal with the wide range of issues related to GMOs. The subcommittee will focus on:

- 1) Biosafety guidelines for agricultural products derived from biotechnology.
- 2) Biosafety guidelines for research on GMOs.
- 3) The case of labeling of GMOs and GMO-derived products.

The GMAC Committee shall consist of representatives from national agencies:

- *Agency for Science, Technology and Research(A*STAR)
- *Agri-Food and Veterinary Authority of Singapore (AVA)
- *Attorney General's Chambers (AG Chambers)
- *Consumers Association of Singapore (CASE)
- *Institute of Molecular and Cell Biology (IMB)
- *Ministry of Health (MOH)
- *Nanyang Technological University (NTU)
- *National Institute of Education (NIE)
- *National Parks Board (NParks)
- *National University of Singapore (NUS)

Importers applying to bring into Singapore genetically modified organisms must first prove that these GMOs are considered safe for public consumption in their countries of origin before they are allowed entry into Singapore. Food producers must perform tests on the quality, allergenicity, toxicity, composition and nutritional values of food derived from GMOs before these foods are allowed entry. Foods containing new substances as a result of genetic modification are subjected to additional tests.

Singapore Biosafety Guidelines for Research on GMOs

In May 2006, the Genetic Modification Advisory Committee (GMAC) released a new set of guidelines to further promote and enhance the biosafety culture amongst Singapore scientists who are working on genetically modified organisms and to establish a common framework for the assessment and notification of research on GMOs in Singapore.

Entitled ' Singapore Biosafety Guidelines for Research on Genetically Modified Organisms', the Guidelines will provide the road map for ensuring public safety while allowing for the commercial exploitation of GMOs and GMO-derived products by companies and research institutions in Singapore. The Singapore Biosafety Guidelines for Research on GMOs is the first local guideline specific to genetic modification research.

Registration of Approved Agriculture-Related GMOs

A register of approved agriculture-related GMOs will be set up and updated by the GMAC Secretariat. Once the GMOs under consideration have been approved for release the GMOs shall be registered with the GMAC Secretariat. At the time of writing, the register has not yet been established.

Procedures for Notification

All agriculture-related GMOs imported into Singapore by the importer/distributor should be in compliance with existing national and international regulations.

Prior to the distribution of any agriculture-related GMOs in Singapore, the importer is required to submit a proposal before GMAC. The importer should consult GMAC to determine the appropriate approval process for the agriculture-related GMOs and the specific information necessary for an assessment.

Filing an application

Proponents can file an application for the approval of agricultural biotech products under the current regulatory framework set up.

Procedures for approval

The GMAC will forward the proposal to the Sub-Committee. The Sub-Committee may either endorse/reject the proposal or appoint the relevant agency or an expert panel to evaluate the proposal within 90 days. The panel of experts will review and assess the risks associated with each stage of the release using the questionnaire and risk assessment criteria as attached as Appendices 1 and 2. The agency/expert panel will submit their recommendations to the Sub-Committee within 90 days.

The GMAC will decide on the recommendations of the Sub-Committee within 60 days. GMAC can request further information/clarification from the Proponent should the need arises.

Review Process

The proponent is required to disclose the necessary information for risk assessment and safety. The broad classification of information required for GMAC to carry out a risk assessment include:

- Species of organisms
- Eventual use of GMO
- Location for release
- Habitat and ecology
- Genetics of the GMO
- Data from contained work and other studies
- Experimental procedures, monitoring and contingency planning

Political Factors

Singapore authorities follow internationally proven science based standards in enacting the regulatory framework for approving the imports of agriculture related GMOs. Singapore tends to follow the lead of developed countries and international bodies like CODEX in allowing the entry of GMOs into the country.

Names of GMAC office holders

Names and agencies of current office holders of the GMAC Committee:

Dr. NGIAM Tong Tau (Chairman)
Executive Director
United Engineers Limited

Dr. Chua Sin Bin
Chief Executive Officer (Co-Deputy Chairman)
Agri-Food & Veterinary Authority of Singapore

Professor LEE Sing Kong
(Co-Deputy Chairman)
Director
National Institute of Education

Dr. Andre WAN
Director
Biomedical Research Council
Agency for Science, Technology and Research

Mr. Sivakant TIWARI
Principal Senior State Counsel
International Affairs Division, Attorney-General Chambers

Dr. Lena CHAN
Deputy Director
Biodiversity Centre
Conservation Division, National Parks Board

Associate Professor Peter DROGE
Head, Genomics and Genetics Division
Acting Head, Molecular and Cell Biology Division,
School of Biological Sciences, Nanyang Technological University

Associate Professor CHAN Woon Khiong
Principal Investigator and Lecturer
Department of Biological Sciences,
National University of Singapore

Mr. SEAH Seng Choon
Executive Director
Consumers Association of Singapore

Associate Professor GOH Kee Tai
Senior Consultant
Communicable Diseases Division
Ministry of Health

Associate Professor Uttam Surana
Principal Investigator
Institute of Molecular and Cell Biology Division

Dr. Srinivasan RAMACHANDRAN
Associate Director
Strategic Research Programmes
Temasek Life Sciences Laboratory

Dr. Lee Lay Tin
Senior Specialist
Occupational Health & Safety Division
Ministry of Manpower

List of Biotechnology crops permitted to be imported into Singapore

Crop	ID	Date of Approval
Corn	MON863	23 May 2006
Corn	NK603	23 May 2006
Corn	MON88017	2 July 2007
Sugar Beet	H7-1	2 July 2007
Cotton	MON88913	2 July 2007

Policy on Labeling GMOs

Currently Singapore does not have labeling regulations as the authorities recognize that it is a very complex issue that requires careful consideration of several factors, e.g. threshold levels, types of foods to be labeled, and the scientific basis to be used for labeling.

The Singapore government is monitoring and studying worldwide developments on this subject. It will wait and assess decisions reached at Codex Alimentarius meetings and see if subsequent recommendations that are adopted at these meetings can be embraced in the local context.

SECTION IV. MARKETING ISSUES

Singapore has not enacted laws to specifically keep out genetically modified foods. Products that are deemed safe for consumption by their national food regulatory bodies in their respective countries of origin will be reviewed by the GMAC committee prior to their release in the Singapore market.

In general there are no barriers to the import of U.S. genetically modified products that have already been approved by U.S. federal agencies like FDA. There are basically no political barriers enacted against the import of genetically modified organisms.

There are also no vocal consumer groups in existence in the country which are against the imports of GMO products.

Public Awareness Campaign

In a nation-wide survey in May 2005 commissioned by GMAC, it was found that only 40 percent of the Singaporeans surveyed have heard of the term 'genetic modification'. However, only half of this group understood the terminology and basic concepts. Among those who have heard the term 'genetic modification' attitudes towards genetically modified foods were favorable. About 20 percent of respondents thought that eating genetically modified foods could change a person's genes.

Since 2001, GMAC through its Subcommittee on Public Awareness had organized public forums, conducted talks, gave interviews to schools, media and civic organizations and distribution of brochures on GMOs and genetically modified foods to the general public.

On Jan 26, 2007, GMAC and the International Service for the Acquisition of Agri-biotech Applications (ISAAA) organized a public forum to address key issues on biotech crops. The forum was very well attended by the media, business people, students and the general public.

Cartegena Biosafety Protocol

At the time of writing this report, Singapore was not a signatory to the biosafety protocol.

SECTION V. CAPACITY BUILDING AND OUTREACH

In June 2006, the Ag Counselor contacted the Singapore government to alert them on India's new requirements for the imports of biotech products. The Ag Counselor urged GOS to comment on the new GOI regulations and to join the United States in requesting that the GOI also notify these new regulations to the WTO SPS Committee.

Post understands the Singapore Government is interested in conducting a nation wide public awareness program. In connection with this intention, post encouraged the GMAC committee to attend the APEC High Level Policy Dialogue on Public Perception Conference taking place in Lima, Peru on October 4-6, 2007. Post will also continue to keep in contact with GMAC to help identify suitable training programs on public awareness.

SECTION VI. Reference Materials

Useful websites: Genetic Modification Advisory Committee

Website: <http://www.gmac.gov.sg>

Agri-Food & Veterinary Authority of Singapore

Website: <http://www.ava.gov.sg>

END OF REPORT